

THE AMERIND PHYLUM AND THE PREHISTORY OF THE NEW WORLD

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Introduction

Ever since European explorers first reached the New World almost five centuries ago -- and found that the entire continent was already inhabited -- there has been great interest in the indigenous peoples of the Americas. In the past two centuries in particular these native peoples have been the subject of intensive research by anthropologists, archaeologists, biologists, and linguists. Among the many questions that have been investigated by such scholars are (1) when did these peoples first arrive in the New World?, (2) where did they come from?, and (3) how are the various groups related to each other? There has been substantial progress on some of these questions and very little on others. We know today that the initial immigration was fairly recent because all hominid remains so far discovered belong to the species Homo sapiens sapiens; there are no archaic varieties of Homo such as are widely found in the Old World. Furthermore, there is no trace of human occupation in the archaeological record before 100,000 B.P. and indeed the few putative dates before around 14,000 B.P. are open to serious question. Before this date alleged traces of man are meager; after this date they rapidly become plentiful. Many anthropologists consider the earlier dates as simply spurious results of Carbon 14 dating.

We also know that the Native Americans are biologically closest to Asiatic peoples. Physical similarities are apparent even to the untrained eye and are confirmed by genetic studies. It has thus long

been accepted that the Native Americans migrated from East Asia, in all likelihood at a time when the Bering land bridge connected NE Asia with Alaska. From this point the immigrants would have gradually moved south, eventually populating all of North and South America. Suggestions that the initial immigration took place in South America, followed by an expansion northward, are fanciful and unsupported by the evidence. The Polynesian occupation of the Pacific Islands is of very recent date so that even if some Polynesians did make it as far as the New World they would have found it already fully occupied. In addition, as we shall see below, the linguistic evidence points to a north-south expansion.

Despite the fact that scholars have made remarkable progress on the questions of when and from where these peoples migrated to the New World, there has been little progress in discovering the internal relationships of the Native Americans and the related question of the number of distinct migrations that they represent. However, with the publication of Greenberg (1987) these questions too have begun to yield answers. Using the methodology of multilateral comparison that he pioneered so successfully in regard to the classification of African languages over three decades ago, Greenberg classifies all the languages of the New World into but three phyla: (1) Amerind, (2) Na-Dene, and (3) Eskimo-Aleut. We cannot entirely discount the possibility that there were other migrations which have left no trace in the linguistic record, but the lack of any tangible evidence for such groups means that it is just a possibility which must always remain open.

The distribution of these three phyla, which is shown in Map 1,

indicates that the initial migration was that of the Amerind people, followed by the Na-Dene and the Eskimo-Aleut in that order. Such a relative chronology agrees well with the internal diversity of each family. The Amerind family is so diverse that its unity and bounds went largely unnoticed prior to Greenberg's work. Most Amerindian linguists to the present day have clung to the belief that the New World contains dozens, if not hundreds, of independent linguistic groups among which there are no known genetic relationships (cf. Campbell & Mithun 1979). The underlying causes of such linguistic myopia are discussed fully in Ruhlen (1987), to which the interested reader is referred. On the other hand, the unity of the Eskimo-Aleut family is so clear that it was first recognized by Rasmus Rask early in the nineteenth century and has since that time been universally accepted. The Na-Dene family lies somewhere between the obvious Eskimo-Aleut family and the largely unnoticed Amerind family. Like Eskimo-Aleut it was first noticed in the nineteenth century and was given firm support by Edward Sapir early in this century, but despite this it is by no means universally accepted even today.

What evidence is there that there were in fact three separate migrations from the Old to the New World and not simply one migration with subsequent diversification in the New World? Probably the strongest evidence is that the Eskimo-Aleut group is most closely related to languages of Northern Asia and Europe (see Greenberg, this volume), while the Na-Dene group is closest to Sino-Tibetan, Ket, and North Caucasian languages (see Shevoroshkin, this volume). It thus appears highly unlikely that the three New World phyla form a valid genetic grouping at any level, though of course all three may ultimately be related if the respective families to which each

belongs are related. A few roots common to all three are to be interpreted in this manner. In addition to this linguistic evidence, studies of human dentition and genetics support the same tripartite classification (see Greenberg, Turner, and Zegura 1986).

In light of the known archaeological, biological, and linguistic data the most plausible scenario for the peopling of the New World appears to be the following. Some time between 20,000 and 12,000 BP the initial immigration took place and these people came to occupy most of North and South America in a short period of time (several millennia). It was this population that ultimately gave rise to all of the diverse Amerind tongues. Considerably later, though the precise date is difficult to determine, the second immigration occurred, giving rise to the modern Na-Dene languages. Finally, some time after 4,000 BP the ancestors of the modern Eskimo-Aleut group appear on the scene completing the pre-Columbian penetration of the Americas. Zegura (1985) provides an excellent survey of these questions.

The present paper is entirely prospective; for a detailed retrospective account of Amerindian classification the reader should consult Ruhlen (1987). Furthermore, I will focus here entirely on the initial Amerind immigration. Using the data of Greenberg (1987) I will investigate the internal subgrouping of the Amerind family and from this subgrouping I will try to deduce the relative chronology of its disintegration. This paper should be considered a report on work in progress rather than a definitive statement. Much of the evidence I have not yet had time to investigate thoroughly. Nevertheless, even at this preliminary stage some of the results do seem to be well

supported, other results less so. All of the proposals should be considered working hypotheses, subject to refinement and revision as the analysis proceeds. As such they differ from Greenberg's tripartite classification of New World languages, which I consider established beyond a reasonable doubt.

I would like to acknowledge the many valuable conversations I have had with Joseph Greenberg concerning the internal structure of the Amerind family. Similarly, I am indebted to L. L. Cavalli-Sforza of the Stanford University School of Medicine for the statistical analysis of the data. The able counsel of both has been invaluable in this preliminary study of the internal structure of the Amerind family. Neither, however, necessarily agrees with the specific conclusions outlined below.

The Internal Structure of the Amerind Phylum

Greenberg (1987) divides the Amerind phylum into 11 subgroups and provides supporting etymologies for each. These 11 stocks are Almosan-Keresiouan, Penutian, Hokan, Central Amerind, Chibchan-Paezan, Andean, Equatorial, Macro-Tucanoan, Macro-Carib, Macro-Panoan, and Macro-Ge. The distribution of these 11 subgroups is shown in Maps 2 and 3. Greenberg also suggests, without explicit evidence, that (1) Almosan-Keresiouan, Hokan, and Penutian form a higher-level grouping that he calls Northern Amerind, (2) Equatorial and Macro-Tucanoan go together in a grouping called Equatorial-Tucanoan, (3) Macro-Ge and Macro-Panoan together form a Ge-Pano group, and (4) this Ge-Pano group is closest to Macro-Carib in a grouping called Ge-Pano-Carib.

As a first step in investigating Amerind subgrouping I

constructed a matrix showing the distribution of the 329 etymologies found in two or more of the 11 Amerind subgroups. This matrix, which appears as Appendix C of Greenberg's book, is necessarily imperfect in several respects. First, better documented language families are more likely to show cognates than poorly documented ones. Second, families with many languages have a greater chance of retaining ancestral Amerind roots than families with relatively few languages. Third, as a pioneering effort covering an enormous number of languages over a vast geographical territory, Greenberg cannot be expected to have noted every possible cognate even when such documentation does exist. Despite these caveats, however, the matrix is sufficiently rich and detailed to warrant further investigation.

If two or more of the 11 Amerind subgroups do constitute a valid genetic node within Amerind we should expect to find exclusively shared innovations that define such nodes. Therefore, as a first step in the analysis I compiled a list of two-way and three-way exclusively shared etymologies in the Amerind matrix. The results, which are shown in Table 1, support all of Greenberg's suggested higher-level groupings. The most strongly supported, perhaps somewhat surprisingly, is the Northern Amerind grouping.

As a second step in the analysis Cavalli-Sforza applied certain standard statistical tests to the Amerind matrix. These tests construct "'maps'" and phylogenetic trees based on the data contained in the matrix. Two variations of the tests were used. In the first (Figures 1 & 2) only the presence of shared traits was counted, that is, similarity between groups is based solely on shared cognates. In the second (Figures 3 & 4) both the presence and absence of shared traits are taken into account; in this case similarity is based not

only on shared cognates but also on the failure to participate in an etymology.

Both of the phylogenetic trees are similar and support those higher-level groupings suggested by Greenberg. In addition, they both support a grouping of Equatorial-Tucanoan with Ge-Pano-Carib in a node I call Southeast Amerind. Chibchan-Paezan and Andean are intermediate between Northern Amerind and Southeast Amerind, slightly closer to Northern Amerind in Figure 2, but closer to Southeast Amerind in Figure 4. The one major difference in the two plots was Central Amerind, which was the most divergent branch of Amerind in Figure 2, but was placed with Ge-Pano-Carib in Figure 4. The source of this anomaly is not readily apparent, but evidence discussed below leads me to believe that Central Amerind is in fact the most divergent branch of Amerind. Its curious position within Ge-Pano-Carib in Figure 4 may result from a confusion of traits that are indeed absent in Central Amerind with traits in Ge-Pano-Carib that are absent due to poor documentation.

Finally, taking into account the subgrouping evidence outlined above, I went through the 329 Amerind etymologies and made the most restrictive hypothesis possible for each. For example, an etymology restricted to Macro-Ge and Macro-Panoan is considered to be an innovation of Ge-Pano and is ascribed no higher status within the Amerind phylum. The result of this partition of the Amerind etymologies is shown in Table 2, and the phylogentic tree which best accounts for the distribution of the Amerind etymologies is shown in Figure 5. The Amerind phylum thus appears to consist of three basic subgroups, Northern, Central, and Southern, with Northern and

Southern together coordinate with Central at the highest level of Amerind classification. Northern Amerind and Central Amerind each consists of three subgroups, but there appears to be no evidence at present for further subgrouping. Southern Amerind also seems to consist of three subgroups, but in this case Chibchan-Paezan appears to be coordinate with the other two, Andean and Southeast Amerind. The subgroup consisting of these latter two groups I will call South American Amerind since it encompasses the six basic Amerind stocks confined to South America.

Evidence for the Divergence of Central Amerind

In the preceding section I have given preliminary quantitative evidence for the Amerind subgrouping shown in Figure 5. This evidence has been solely in terms of the distribution of the etymologies; the intrinsic linguistic content of the etymologies has not yet been brought into play. It is of course significant that of the 329 etymologies Greenberg offers in support of the Amerind phylum 101 are apparently confined to Southern Amerind. Each of these represents a potential innovation within the group and taken together they serve to define the Southern Amerind group. Inevitably, as research proceeds, some of the etymologies that now appear confined to Southern Amerind will be found to have cognates in Northern and/or Central Amerind, just as some etymologies now restricted to Northern or Central Amerind will be found to have cognates elsewhere in the Amerind family. Some of the etymologies will no doubt turn out to be spurious and will have to be discarded. In short, there will be an inevitable shuffling of the etymologies as their scope is either broadened or restricted. At the same time, however, it is to be

expected that for each Southern Amerind etymology that turns out to have Northern or Central congeners additional Southern Amerind etymologies will be found so that even a considerable shuffling of the etymologies will not necessarily lead to a different subgrouping of the Amerind family.

If the subgrouping proposed in Figure 5 is correct, we should expect to find corroborative linguistic evidence, in the form of phonological and/or semantic innovations, that represents the same period of independent historical development responsible for the lexical and grammatical innovations. Such qualitative evidence should be marshalled in support of each of the nodes posited in Figure 5. I will have space here only for some brief comments concerning the divergence of Central Amerind.

The statistical divergence of Central Amerind is indeed dramatic. There are 118 etymologies exclusive to Northern and Southern Amerind, but only 18 exclusive to Central and Southern Amerind and a mere five exclusive to Northern and Central Amerind. The qualitative evidence appears to run in the same direction, where we may cite three possible phonological innovations and eight possible semantic innovations separating Central Amerind from the remainder of the Amerind family.

The first phonological innovation concerns the shape of the root. Central Amerind is characterized by a CVC structure, while both Northern and Southern Amerind frequently show an initial vowel, a final vowel, or both. Thus in a significant number of the etymologies Central Amerind CVC corresponds to Northern and Southern V_1CVCV_2 . Furthermore, V_1 and V_2 are often similar or even identical in both the Northern and Southern groups. Etymologies showing this

pattern are numerous: Nos. 55, 61, 74, 82, 103, 104, 112, etc.

Whether the initial and final vowels are innovations of Northern & Southern Amerind, or retentions in Northern & Southern Amerind of an original Amerind trait that has been lost in Central Amerind, is unclear. In either case the trait serves to distinguish Central Amerind from the remainder of the Amerind family.

In six of the etymologies (6, 36, 69, 185, 193, 263) Central Amerind shows the reflex s corresponding to a stop or affricate (t, t^s, ç) elsewhere in the Amerind family.

Finally, Central Amerind -n- corresponds to Northern and Southern -l- in etymologies 67, 140, 161, 210, and 262. In a good many cases the basic pattern seems to be Northern Amerind -l- = Central Amerind -n- = Chibchan-Paezan, Andean -l-, -r-, -n- = Southeast Amerind -r-.

Table 3 shows eight possible semantic innovations within Central Amerind.

Taken together these phonological and semantic innovations support the notion that Central Amerind is the most divergent branch of the Amerind family, the possibility of which was first suggested by the quantitative evidence. I anticipate that further investigation will uncover additional evidence of this divergence.

Implications for New World Prehistory

The subgrouping of the Amerind phylum shown in Figure 5, for which both quantitative and qualitative evidence has been adduced in the preceding sections, has immediate implications for the initial settling of the Americas. Indeed, a subgrouping is nothing more than a hypothesis about the relative chronology of the disintegration of a

family. When we combine such information with the geographical distributions of the various subgroups (Sapir's Age-Area hypothesis), we may deduce not only the order of the break-up of the Amerind family but the geographical area in which certain divisions likely occurred.

Maps 4-7 summarize my preliminary conclusions regarding the disintegration of the Amerind family. Map 4 proposes an approximate geographical homeland for each of Greenberg's 11 basic Amerind stocks. Some of these proposals have a higher degree of certainty than others. In particular, I have a fairly high degree of confidence in the positions attributed to Almosan-Keresiouan, Penutian, Central Amerind, and Chibchan-Paezan, considerably less in the case of the others. The matrices for each of these 11 Amerind branches are currently being analyzed both quantitatively and qualitatively along the lines sketched for the Amerind matrix in the present paper. Clearly the results of this analysis can be expected to shed light on the location of the original homeland of each of these groups.

Map 5 attempts to locate the homeland of the higher-level groupings that have been posited in this paper. Finally, Maps 6 and 7 show the primary and secondary divisions within the Amerind family that likely occurred during the early stages of its disintegration. Obviously many more such divisions would have subsequently taken place before the initial settling of the Americas was complete.

In summary, the linguistic evidence presently available points toward the following scenario for the initial peopling of the New World. A single population, speaking a language we may call Proto-

Amerind, made its way from East Asia across Alaska and western Canada and eventually arrived in central Montana. There is no evidence for the Amerind groups that were probably left behind during this trek since these areas were subsequently populated by Na-Dene and Eskimo-Aleut speakers, leaving no trace of an earlier Amerind population. The first basic cleavage within the family separated the Central Amerind group from the remainder of the family. Where precisely this division took place we cannot be sure; it may not have occurred until the Amerind group reached Montana, or it may have taken place earlier during the Amerind expansion. In any event, this group appears to have begun to break up in the American Southwest, where the homelands of two of its three branches can be placed (Uto-Aztecan and Tanoan).

The second basic division produced a group that would ultimately populate most of North America (Northern Amerind) and a group that would eventually occupy almost all of South America as well as portions of Central America (Southern Amerind). This second division in the Amerind family must have taken place considerably later than the first in order to account for the special similarities (some of which must be innovations, others common retentions from Proto-Amerind) between Northern and Southern Amerind. Since the Northern Amerind homeland was likely in the area of Montana the simplest hypothesis is that this was also the homeland of the Northern & Southern group. Despite the fact that the Central Amerind group branched off first they never reached South America. Rather it was the second branch, Southern Amerind, that first reached the Isthmus of Panama, permanently blocking the entry to South America, and ultimately giving rise to all of the native South American Indians except the Yurimangui, a now extinct Hokan group that formerly lived

on the Pacific Coast of Colombia. With this one exception South America appears to have been populated by a single migration.

The Southern Amerind group bifurcated into the Chibchan-Paezan family, which remained generally in situ at the entrance to South America (though there are a number of important outliers), and the South American Amerind group, which moved southward to the area of northern Peru. From this region the Andean family spread southward along the Pacific Coast, eventually reaching Tierra del Fuego. The remainder of the South American Amerind group, which I call Southeast Amerind, gave rise to the five Amerind subgroups that occupy almost all of the territory east of the Andes. My main reason for locating the South American Amerind homeland in northern Peru is that five of its six constituents (all but Macro-Ge) are well represented in this region, suggesting that the basic dispersal was from this area. Analysis of the South American matrices should clarify these questions since at present next to nothing is known about the subgrouping of the South American stocks.

In North America the Northern Amerind grouping split into three subgroups. The Penutian group moved westward through Oregon to the Pacific Coast, whence it spread both northward into Washington and British Columbia and southward into California, and at a later date to Arizona (Zuni), the southeast (Gulf), and Mexico (Mexican Penutian). These latter two groups seem to form a subgroup within the Penutian family. The Hokan family moved southward toward Texas, around the southern end of the Rocky Mountains and then back up the Pacific Coast as far as northern California. The Almosan-Keresiouan group may be regarded as the Northern Amerind subgroup that remained

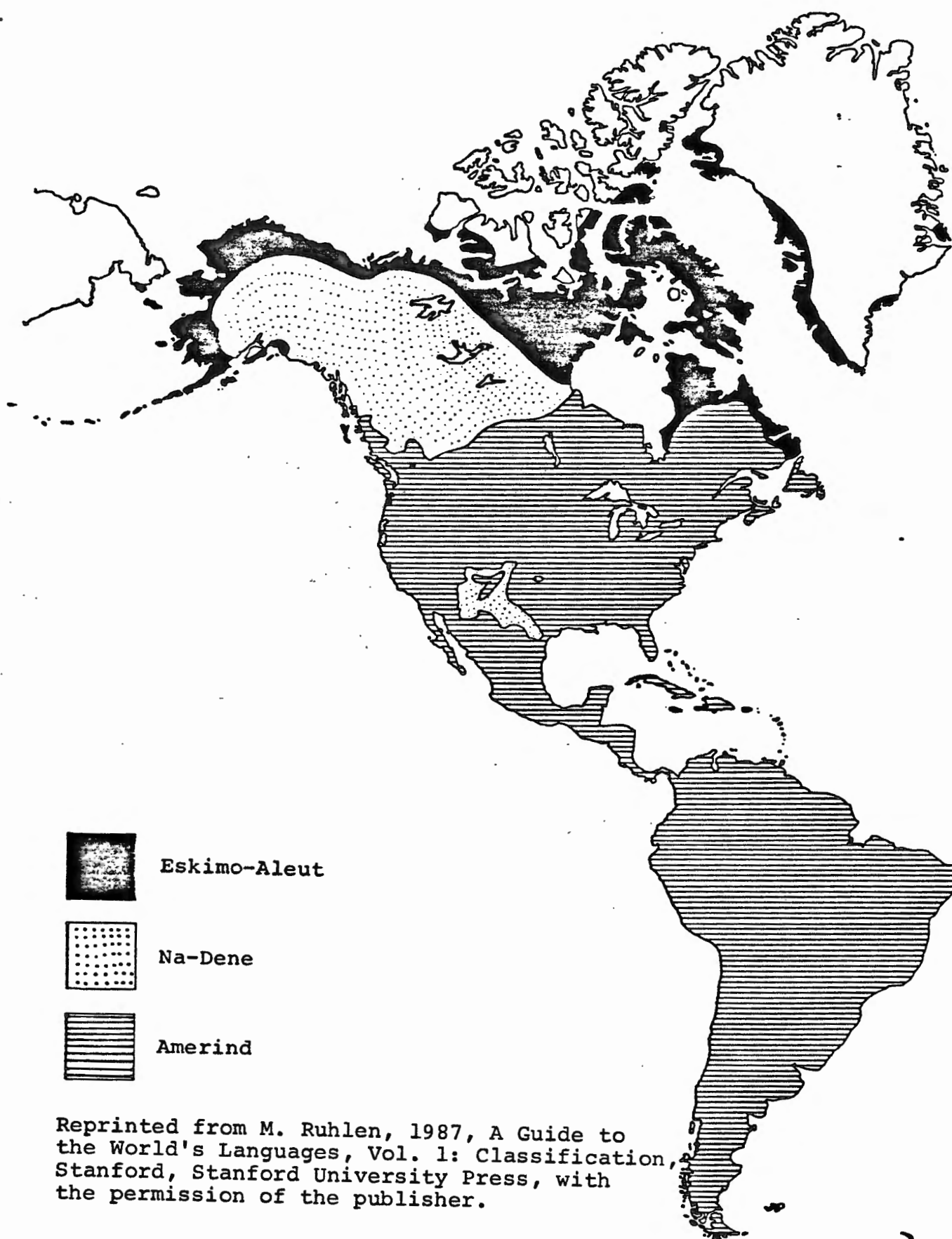
in place in Montana--at least for a while. Eventually, it too bifurcated into the Keresiouan group, which spread to the south and to the east, and the Almosan group, which spread both eastward (Algonquian) and westward (Mosan, Ritwan). The Kutenai may represent the Almosan group that remained behind after the Algic and Mosan groups had branched off. The preceding scenario for the peopling of North America agrees in large measure with that outlined in Krantz (1977), which seems generally correct in its broad generalizations, though wrong on a number of details. Krantz's study was based on animal geography, not linguistics, and is well worth reading for anyone interested in the questions adumbrated here.

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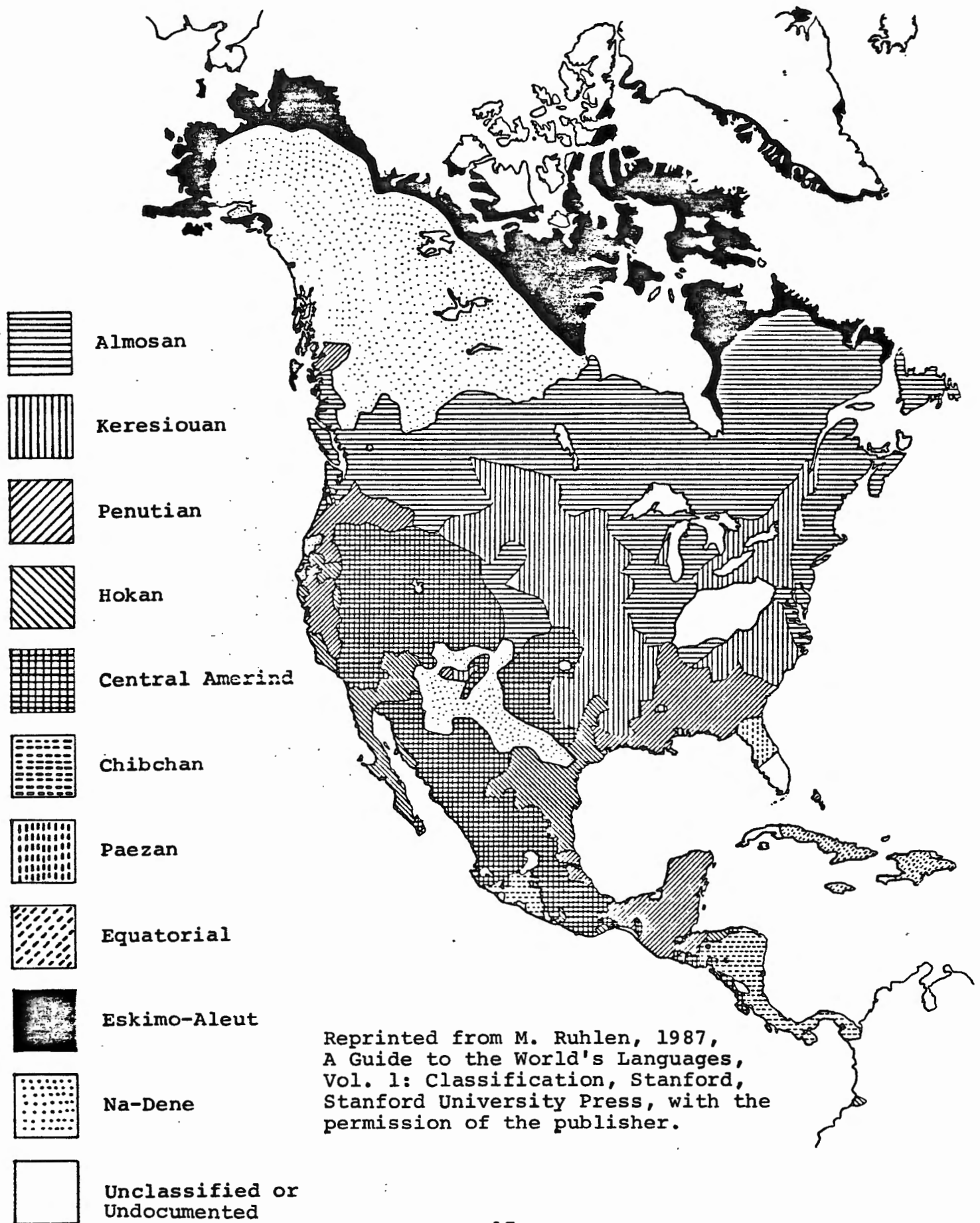
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MAP 1. LANGUAGE FAMILIES OF THE NEW WORLD



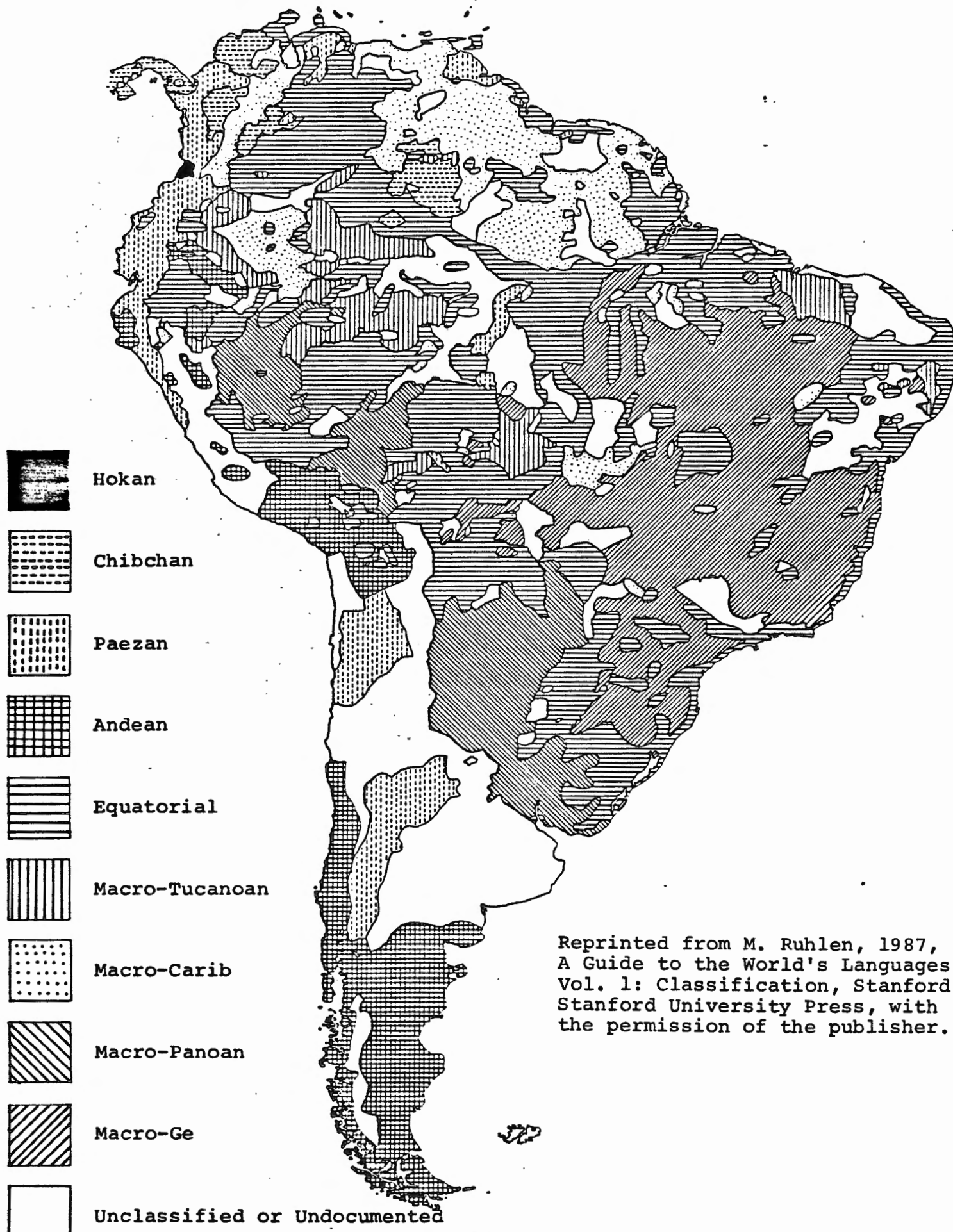
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MAP 2. AMERIND SUBGROUPS, NORTH AND CENTRAL AMERICA



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MAP 3. AMERIND SUBGROUPS, SOUTH AMERICA



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TABLE 1
EXCLUSIVELY SHARED ETYMOLOGIES

TWO-WAY

| <u>Number</u> | <u>Groups</u> |
|---------------|---|
| 9 | Almosan-Keresiouan & Penutian, Equatorial & Andean, Equatorial & Macro-Tucanoan |
| 8 | Penutian & Hokan |
| 7 | Almosan-Keresiouan & Hokan |
| 5 | Penutian & Chibchan-Paezan |
| 4 | Equatorial & Macro-Ge, Macro-Tucanoan & Macro-Ge, Chibchan-Paezan & Macro-Panoan, Macro-Ge & Macro-Panoan, Macro-Carib & Macro-Panoan, Macro-Carib & Macro-Ge, Chibchan-Paezan & Equatorial |
| 3 | Hokan & Macro-Ge, Central Amerind & Chibchan-Paezan, Hokan & Chibchan-Paezan, Hokan & Andean, Penutian & Andean, Andean & Macro-Carib |
| 2 | Penutian & Central Amerind, Chibchan-Paezan & Macro-Carib, Almosan-Keresiouan & Central Amerind, Andean & Macro-Tucanoan, Hokan & Macro-Tucanoan, Hokan & Macro-Carib, Andean & Macro-Panoan, Chibchan-Paezan & Andean, Almosan-Keresiouan & Andean |

THREE-WAY

| <u>Number</u> | <u>Groups</u> |
|---------------|---|
| 5 | Almosan-Keresiouan, Penutian & Hokan |
| 4 | Macro-Ge, Macro-Panoan & Macro-Carib |
| 3 | Andean, Macro-Ge & Macro-Panoan, Penutian, Central Amerind & Chibchan-Paezan |
| 2 | Hokan, Central Amerind & Macro-Ge; Hokan, Andean & Macro-Panoan; Chibchan-Paezan, Andean & Macro-Ge; Almosan-Keresiouan, Macro-Panoan & Macro-Ge; Equatorial, Macro-Tucanoan & Macro-Ge; Penutian, Central Amerind & Macro-Ge |

AK: Almosan-Keresiouan

PN: Penutian

HK: Hokan

CA: Central Amerind

CP: Chibchan-Paezan

AN: Andean

EQ: Equatorial

MT: Macro-Tucanoan

MC: Macro-Carib

MP: Macro-Panoan

MG: Macro-Ge

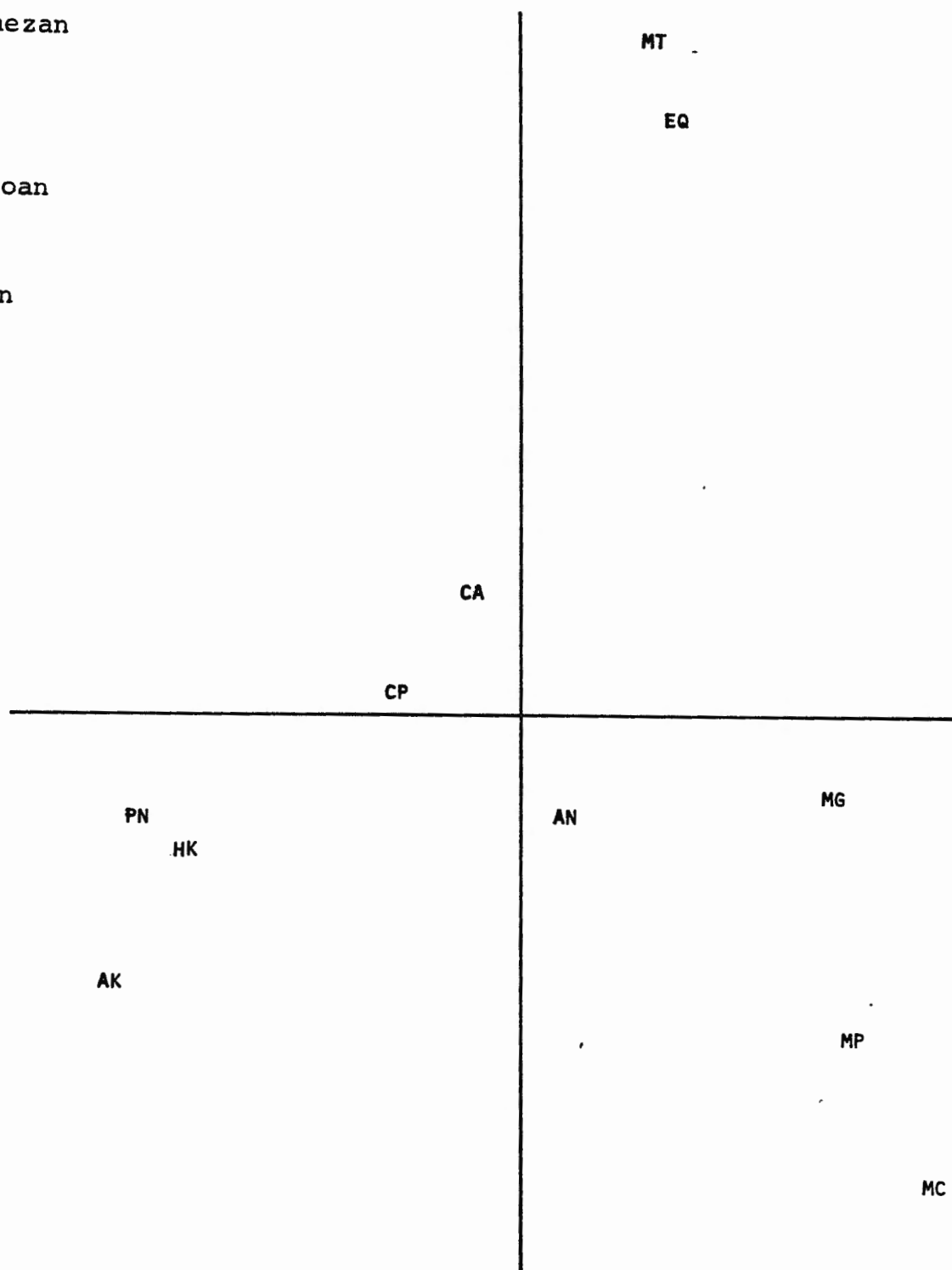


FIGURE 1. SIMILARITY OF AMERIND STOCKS IN TERMS OF SHARED COGNATES

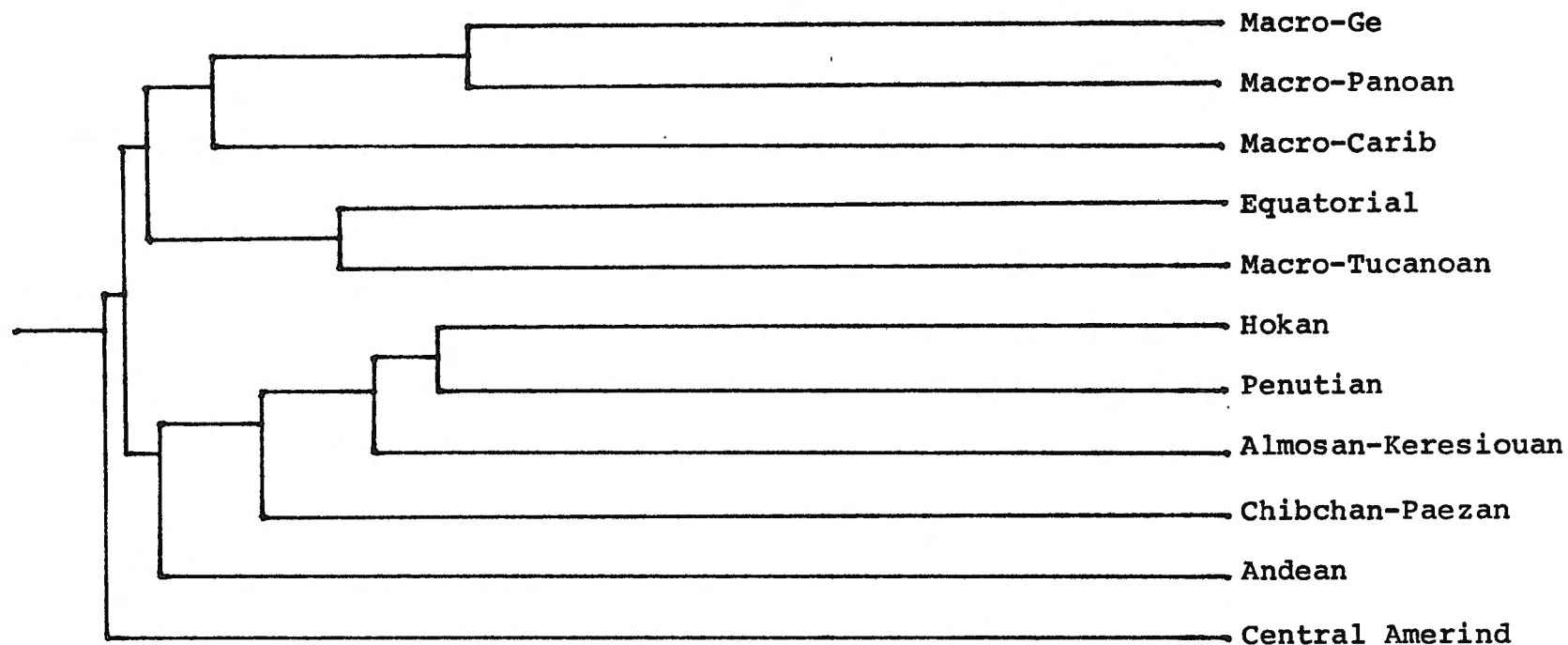


FIGURE 2. PHYLOGENETIC TREE OF THE AMERIND PHYLUM, SHARED COGNATES

AK: Almosan-Keresiouan

PN: Penutian

HK: Hokan

CA: Central Amerind

CP: Chibchan-Paezan

AN: Andean

EQ: Equatorial

MT: Macro-Tucanoan

MC: Macro-Carib

MP: Macro-Panoan

MG: Macro-Ge

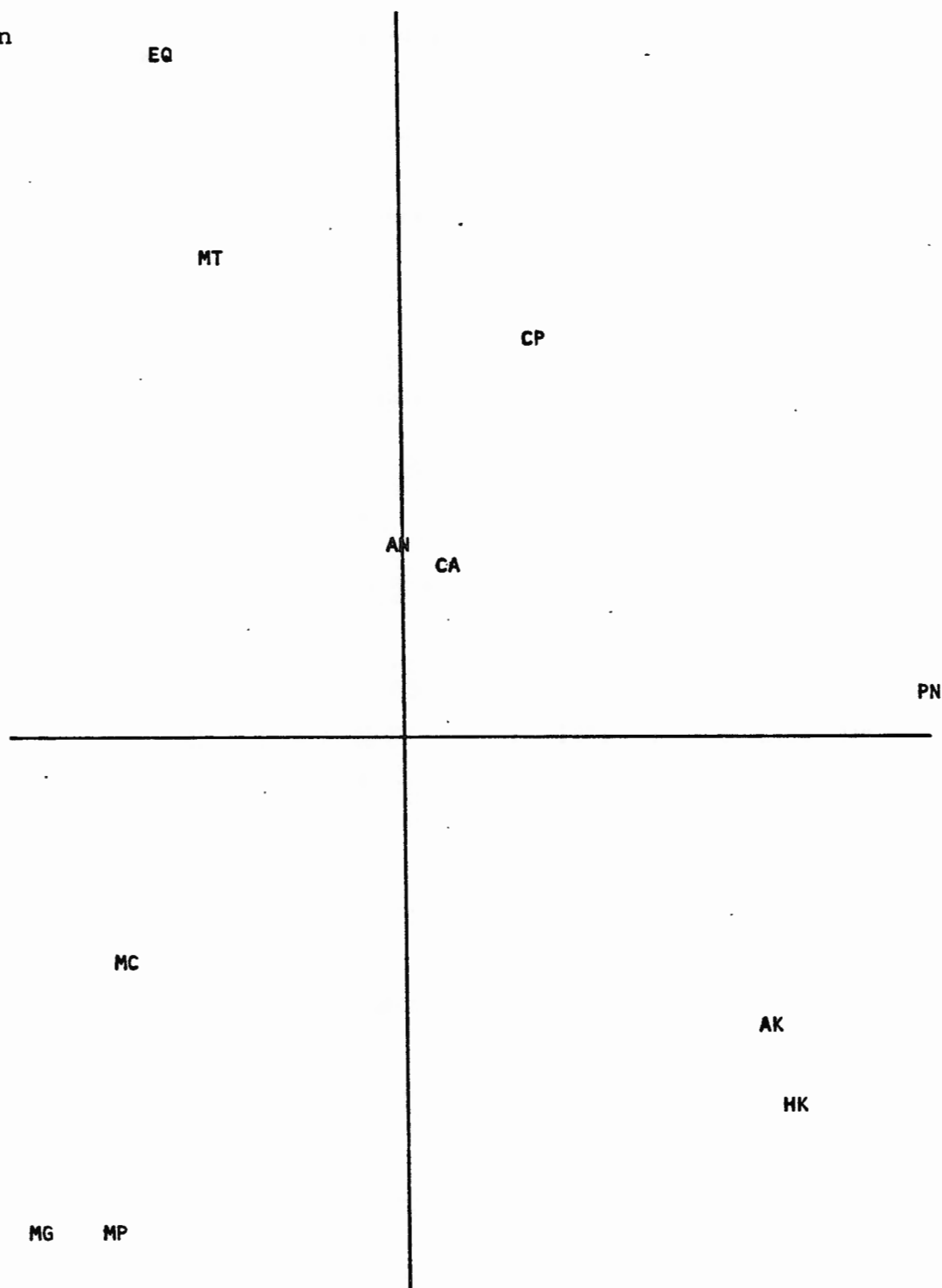


FIGURE 3. SIMILARITY OF AMERIND STOCKS IN TERMS OF SHARED COGNATES
AND THE ABSENCE OF SHARED COGNATES

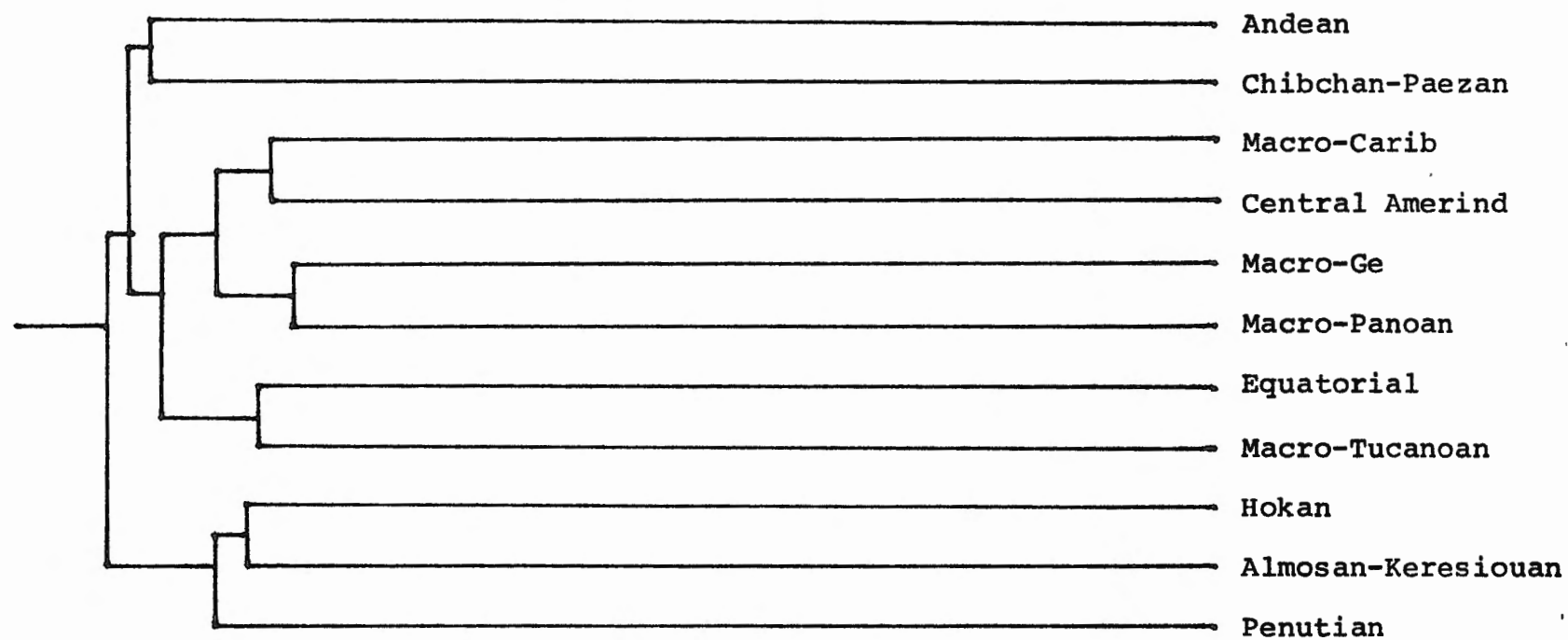


FIGURE 4. PHYLOGENETIC TREE OF THE AMERIND PHYLUM, SHARED COGNATES AND ABSENCE OF SHARED COGNATES

TABLE 2
DISTRIBUTION OF THE AMERIND ETYMOLOGIES

AMERIND [71/10]*:

- I CENTRAL [90/2]
- II NORTHERN & SOUTHERN [101/17]:
 - A NORTHERN [24/5]:
 - 1 ALMOSAN-KERESIOUAN [77/4]:
 - a ALMOSAN [75/4]
 - b KERESIOUAN [57/3]
 - 2 PENUTIAN [211/7]:
 - a GULF-MEXICAN [35/0]
 - i GULF [41/0]
 - 3 HOKAN [168/9]
 - B SOUTHERN [24/5]:
 - 1 CHIBCHAN-PAEZAN [121/6]
 - a CHIBCHAN [45/3]
 - b PAEZAN [60/0]
 - 2 SOUTH AMERICAN [26/1]:
 - a ANDEAN [129/6]:
 - b SOUTHEAST [17/2]:
 - i EQUATORIAL-TUCANOAN [6/3]:
 - EQUATORIAL [133/2]
 - MACRO-TUCANOAN [107/1]
 - ii GE-PANO-CARIB [11/1]:
 - MACRO-CARIB [79/3]
 - GE-PANO [1/4]:
 - I MACRO-PANOAN [63/9]
 - II MACRO-GE [124/0]

*The first number represents the number of lexical etymologies supporting this group; the second number, the number of grammatical etymologies supporting the group in question.

FIGURE 5
PHYLOGENETIC TREE OF THE AMERIND FAMILY

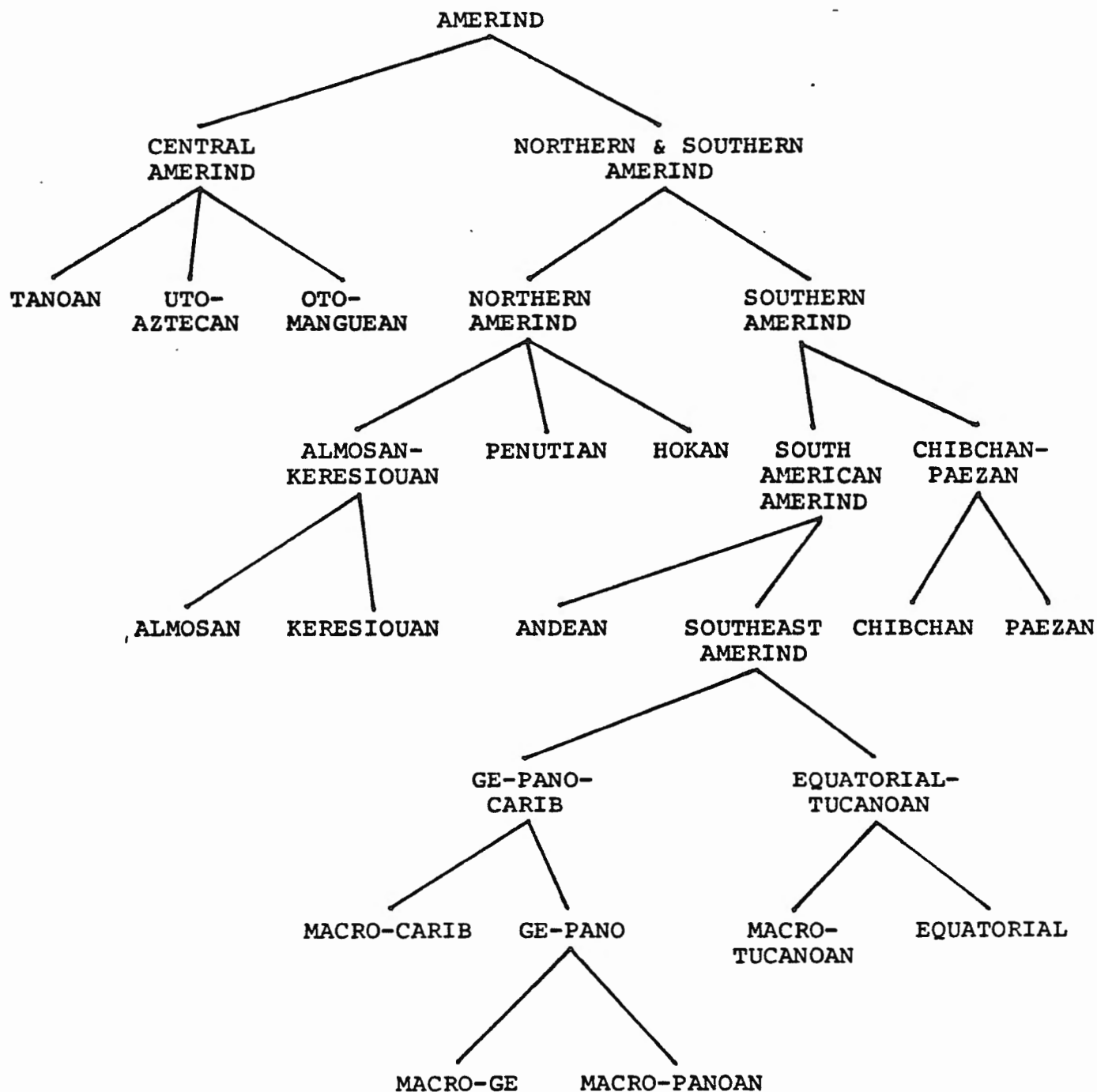
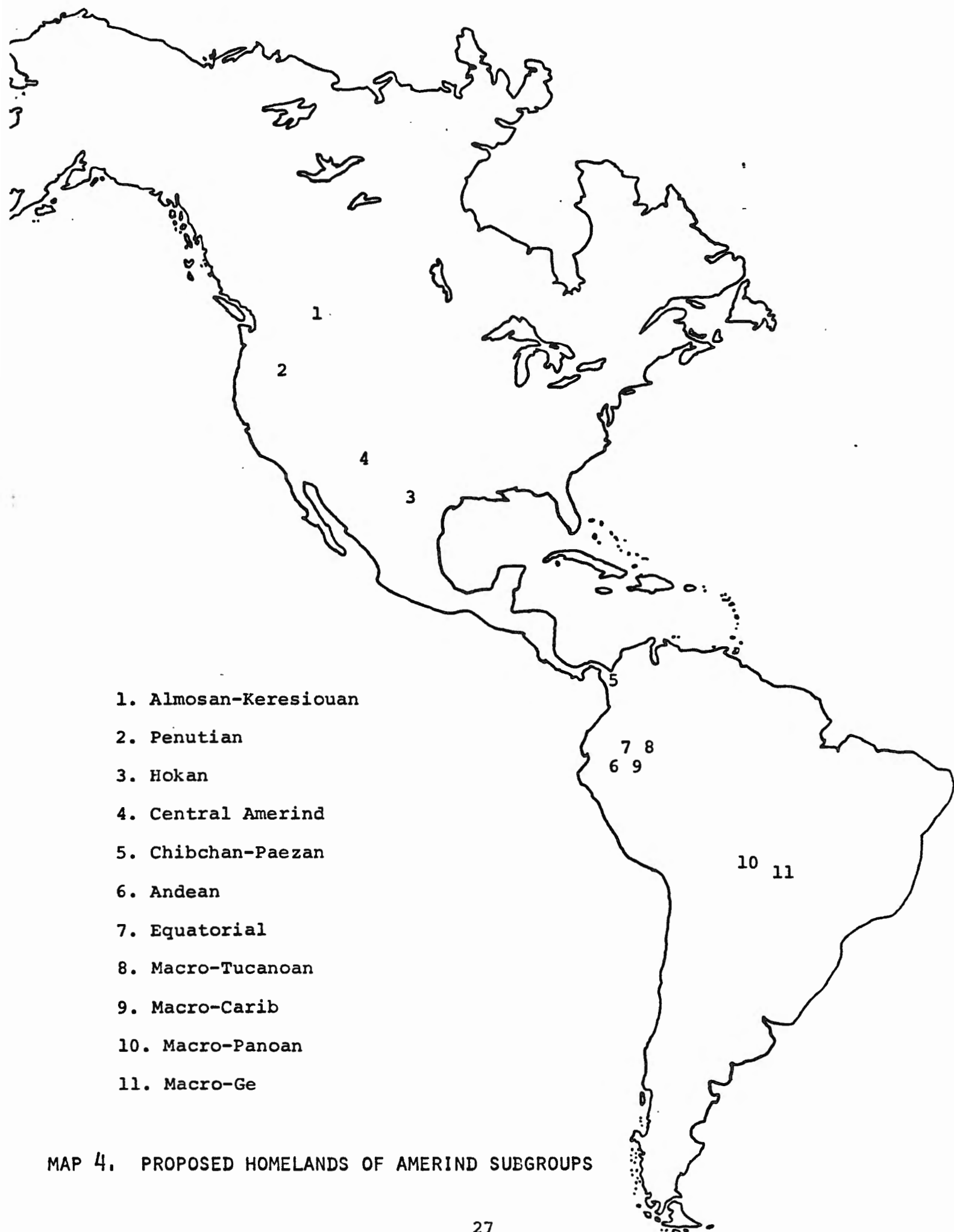
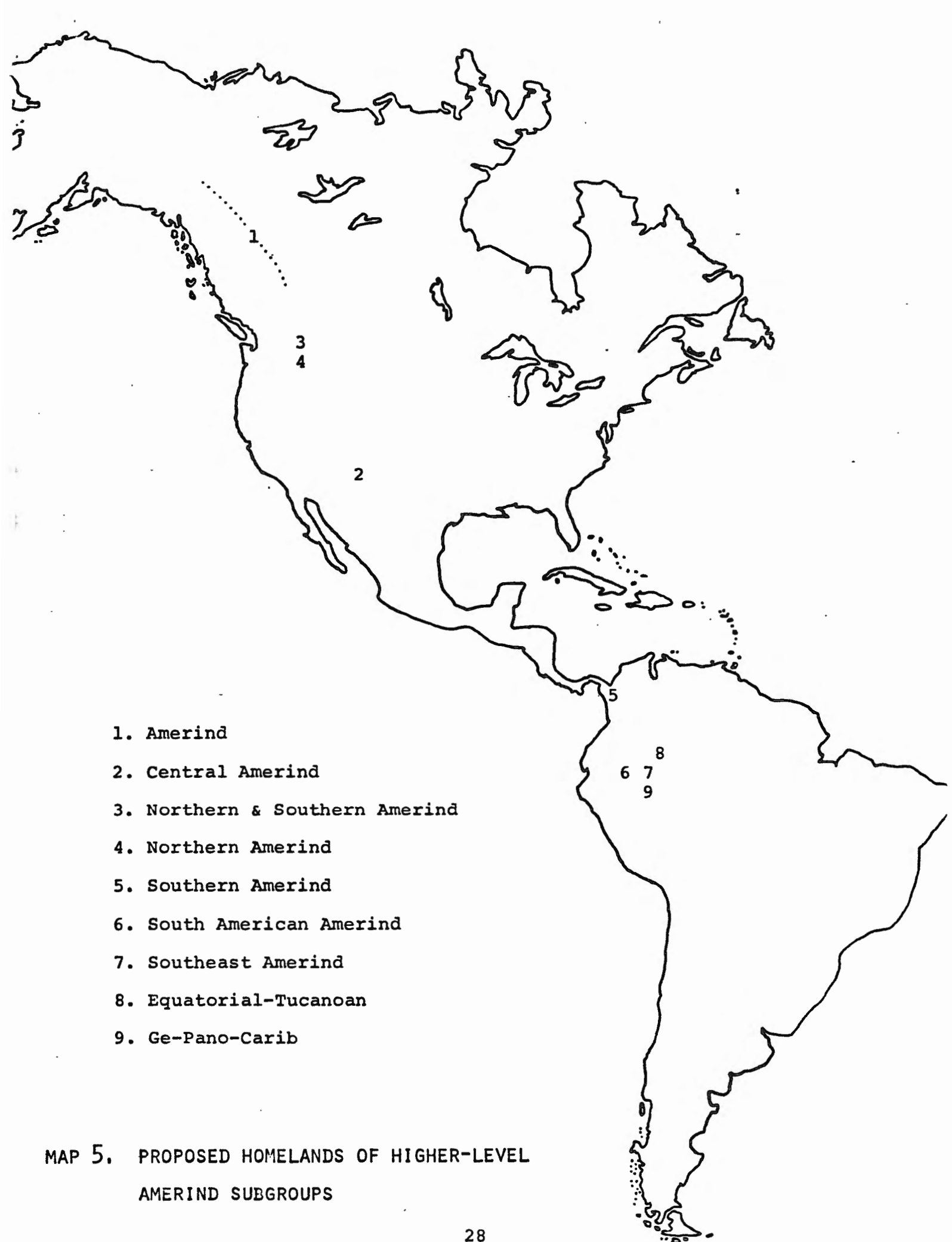


TABLE 3
POSSIBLE SEMANTIC INNOVATIONS IN CENTRAL AMERIND

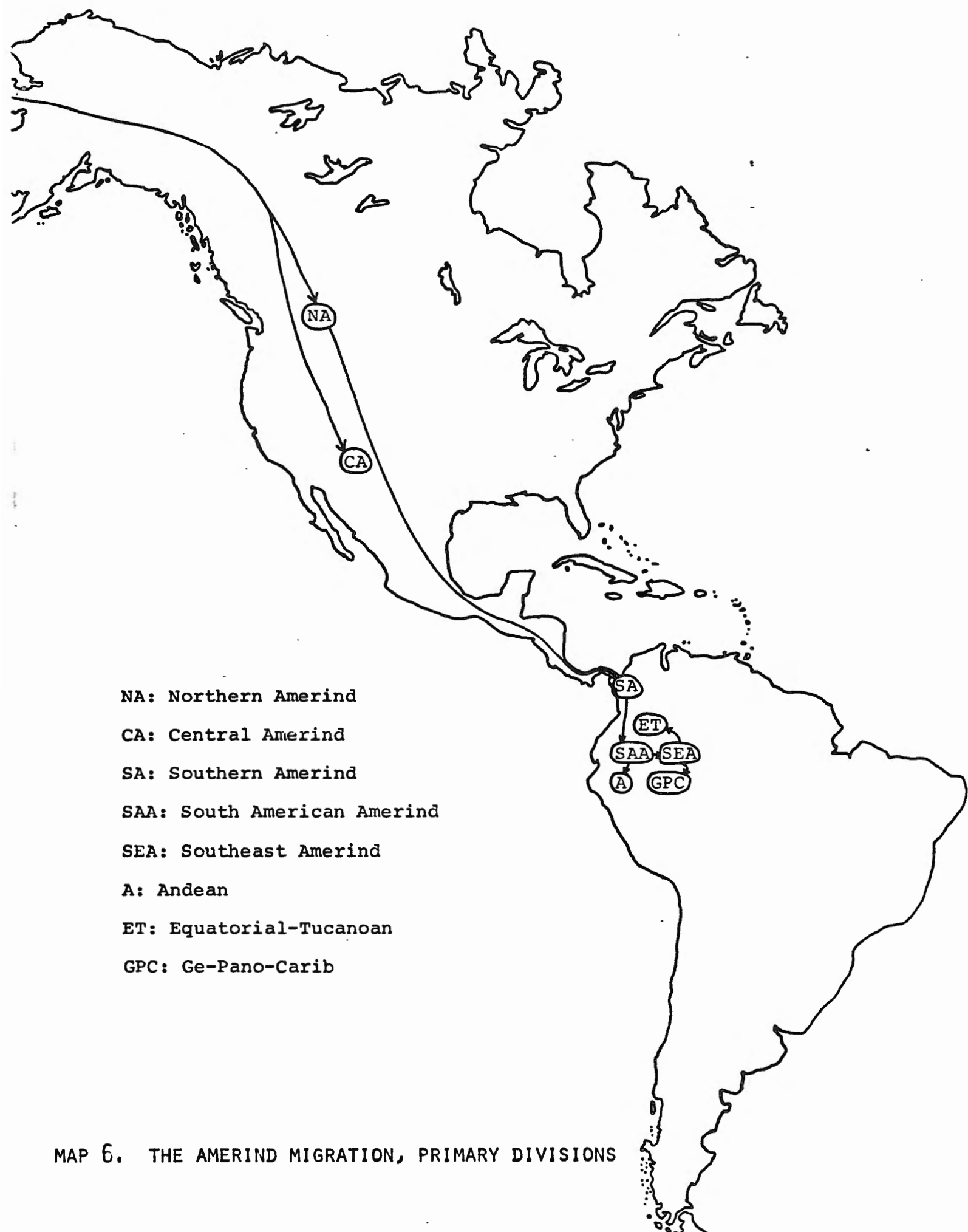
| <u>ETYMOLOGY</u> | <u>CENTRAL AMERIND</u> | <u>NORTHERN AMERIND</u> | <u>SOUTHERN AMERIND</u> |
|------------------|----------------------------|--|--|
| 13 | ASK | SEEK, WISH | SEEK, LOVE, PLEASURE |
| 55 | TALK | CALL, NAME | CALL, CRY, INVITE |
| 64 | SMALL | CHILD, BEAR | BEAR, BE BORN |
| 104 | SEE, FIND, LEARN, TEACH | EYE, FACE, TEAR | EYE, SEE, LOOK |
| 120 | LEG, THIGH | FOOT, KICK, TRACK, SOLE, LEG, HIP, HOOF, RUN, MOVE | FOOT, ANKLE, SHIN, KNEE, THIGH, LEG |
| 157 | THIGH | KNEE, ELBOW, CROUCH | KNEE, ELBOW, THIGH, HIP, FOOT |
| 160 | FAR | LARGE, FAT, ALL, LONG | LARGE, LONG, ALL, MUCH, MANY |
| 175 | WORK | MAKE, DO, CAUSE | MAKE, BUILD, CAUSE, WORK, PUT |



MAP 4. PROPOSED HOMELANDS OF AMERIND SUBGROUPS



MAP 5. PROPOSED HOMELANDS OF HIGHER-LEVEL
AMERIND SUBGROUPS





MAP 7. THE AMERIND MIGRATION, SECONDARY DIVISIONS